

ABSTRACT

HARMON, SANDRA MARLENE. Maternal Civic Engagement, Paternal Involvement, and the Effects on Academic Outcomes for Children. (Under the direction of Toby Parcel.)

In this project, I investigate how maternal volunteering and paternal involvement, two forms of family social capital, affect children's academic outcomes. Prior studies show that volunteer work provides important social capital for adults and improves their physical, psychological, and psychosocial well-being. Additionally, both maternal volunteering and paternal involvement have independent additive effects on children's well-being. Social scientists are concerned that volunteer work has decreased substantially in the last four decades, which may have negative implications for mothers and their children. However, research in this field has yet to study how the interaction of maternal volunteering and paternal involvement affects children's academic outcomes. For my thesis, I use a sample of children ages 10 to 14 (n=1030) and their mothers (n=850) from the National Longitudinal Study of Youth from 2006. I first examine the effects of maternal volunteering on children's math and reading scores. Then, I test the interactive effect of maternal volunteering and paternal involvement. Results from OLS regression analyses show that maternal volunteering positively affects children's math and reading scores. Interaction effects demonstrate that maternal volunteering can boost children's math and reading scores if there is little or no paternal involvement. If children experience high paternal involvement, the effects of maternal volunteering disappear. I discuss the implications of the results and suggest future research in the field of family social capital and volunteering.

Maternal Civic Engagement, Paternal Involvement, and
the Effects on Academic Outcomes for Children

by
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DEDICATION

This thesis is dedicated to my family, Roger Dean, Cassandra Lynn, Andrew Dean, and Noah Steven. I love you and appreciate your support throughout this process. I also want to dedicate this to my extended family, including my mother, siblings, and adopted family. Many of you believed in me more than I believe in myself. Thank you so much for your encouragement and support.

BIOGRAPHY

Sandra Harmon grew up in San Diego, California and worked for 12 years in the field of child development. When she relocated to Colorado, she decided to complete her degree and earned an Associate of Arts degree from Aims Community College in Greeley, Colorado. She then graduated *summa cum laude* from the University of Northern Colorado with a Bachelor's degree in Sociology in 2009. She is currently pursuing a Ph.D. in sociology. She is specializing in the sociology of the family, work, and motherhood. She has a partner of 20 years and three children. Two of her children are presently seeking college degrees.

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INTRODUCTION

In 2009, President Obama signed the *Generations Invigorating Volunteerism and Education* bill. He called on Americans to increase their volunteering efforts to build stronger communities (Baker 2009). The Obama administration's commitment to increase volunteer work reflects the current concerns of social scientists, who find a decrease in volunteer work in the past four decades (Putnam 2000; Tiehen 2000; Wilson and Musick 2000).

Volunteering not only improves communities, but it also builds social ties and expands social networks in the community for men and women, which can lead volunteer workers to better job opportunities (Putnam 2000; Wuthnow 1998). Volunteering develops civic skills, increases civic commitment, and affects physical and psychosocial outcomes (Mirowsky and Ross 1989; Musick, Herzog and House 1999; Stephan 1991; Stolle 1998; Thoits and Hewitt 2001; Verba, Schlozman and Brady 1995).

However, Americans, especially women, experience a time deficit that limits their volunteer participation. From 1965 to 1993, married women's daily volunteer participation rates decreased from 16.4% to 9.2% (Tiehen 2000). The decline in women's volunteer work is due partially to the increase in labor participation rates of married women (Putnam 2000). Since the late 1950's, families experienced a shift from the breadwinner/homemaker family model to a dual-earner family model. Married women's labor participation rates increased from 45% in the 1960's to 75% in the 2005 (Mosisa and Hipple 2006). The increase in women's work for pay in the last fifty years resulted in changes for work and family demands. Many now work the "second shift" of household activities and childcare after

working a full day. As a result of increased commitment to work and home, mothers have less leisure time (Sayer 2005).

Consequently, working mothers spend time investing in their home environments but have less time to build ties between the home and community through volunteering (bridged social capital¹), thus reducing family social capital (bonded social capital²) and negatively affecting children's academic outcomes (Coleman 1988). Nevertheless, research suggests maternal volunteering increases children's civic engagement (Beckers 2007; Kelly 2006) and improves academic outcomes (Muller 1995; Zellman and Waterman 1998). Maternal volunteering works as a mechanism to increase children's human capital. Mothers invest time in the community and build their own social capital; then, they transmit their social capital to children, which improves children's well-being (Coleman 1988).

Since the increase in labor force participation rates for women, the role of paternal involvement has become more important within cultural and in the academic literature. Today, a father's responsibility includes more than the culturally prescribed role of the breadwinner from the 1950s. Fathers are expected to be financial providers and active participants in household work and care giving (Cabrera et al. 2000). We know that increased paternal involvement has positive cognitive (Cooksey and Fondell 1996; Fagan and Iglesias 1999; Harris, Furstenberg and Marmer 1998; Paulson 1994), psychosocial (Pleck 2004), and psychological (Harris, Furstenberg and Marmer 1998) consequences for children.

¹ Putnam (2000) defines *bridged social capital* as a type of social capital that includes instrumental and purposeful activities such as volunteering and other civic engagement efforts, which create diverse ties and heterogeneous groups.

² Putnam (2000) defines *bonded social capital* as a type of social capital that includes the connections and bonds among homogenous groups with similar backgrounds such as families.

More involvement potentially alleviates some of the time pressure on mothers and allows for more time for a mother's leisure time, work hours, and volunteer work.

Maternal volunteering, home environment, and paternal involvement, forms of family social capital, affect children's outcomes. Children benefit from their mothers' investment of time in the community and home and paternal involvement. However, the current literature does not address the interactive effect of maternal volunteering and paternal involvement for improving children's outcomes. Furthermore, research does not consider how the interactive effect of maternal volunteering and home environments improves children's outcomes. Therefore, this project considers not only the additive effects of maternal volunteering, home environment, and paternal involvement on children's academic outcomes, but also the interactive effects of maternal volunteering and paternal involvement on children's academic outcomes and the interactive effects of maternal volunteering and home environment.

To frame this study, I draw upon Coleman's theoretical model of parental transmission of social capital and present the current literature on family social capital's effects on various children's outcomes. Then I discuss the importance of family background characteristics and the effects on children's academic outcomes. Next, I examine the historical and cultural changes in the family that led mothers to a time divide between work and family, which decreased mothers' leisure time. Subsequently, I review current literature on maternal volunteering and paternal involvement and the effects on children. Then, using a sample from the National Longitudinal Survey of Youth from 2006, I address several hypotheses concerning the effects of maternal volunteering. First, I examine the additive effect of maternal volunteering on children's math and reading scores. Second, I test the

interactive effects of maternal volunteering and paternal involvement on children's math and reading scores. Third, I test the interactive effects of maternal volunteering and home environment on children's math and math scores.

LITERATURE REVIEW

Theoretical Framework: Family Social Capital

Coleman (1988) provides a framework for how parents share their social capital with children. He argues that parental human capital, such as education and experience, cannot guarantee positive human capital outcomes for children. Instead, social capital³ can be a powerful tool used in the home and community to benefit children. Social capital includes the time, effort, and material resources spent by parents on children in the home. It also includes the interactions between parents and children in the neighborhood and community, which build "intergenerational closure" through interactions, reciprocity, and trust. Social capital at home and in the community provides children with a concentration of social capital, which supports positive academic outcomes for children. For this project, I consider two types of social capital in the home: paternal involvement and home environment; and one type of social capital in the community: maternal volunteering. I also determine if they have interactive effects that enhance children's outcomes.

Part of Coleman's (1988) argument implies that family structure and stability affects children's educational outcomes. The increase in maternal labor force participation concerned him because mothers' absence during the day leads to a decrease of building

³ Even though I utilize Coleman's social capital theory in this project, I acknowledge that alternative theories of social capital exist. Please see Bourdieu (1986), Lin (2006), Putnam (2000), and Sampson (2001) for explanations of alternative conceptualizations of social capital.

social ties for their children to schools, neighbors, and community, which could affect children's well-being. Coleman's concern regarding the increase in maternal work hours has garnered some support in the literature. If parents work long hours, children may experience negative academic outcomes (Harvey 1999; Hill and O'Neil 1994; Parcel and Menaghan 1994a).

Moreover, Coleman (1988) suggested a two-parent household provides stability for children in the home and promotes positive academic outcomes. Therefore, intact families provide children with more access to social capital than single parent families. Children with alternative family structures may experience some negative effects from family transitions such as divorce, but a number of studies point to the quality of home environment and number of transitions in children's lives as more important (Amato 2010; Demo, Aquilino and Fine 2005). Children from divorced families, however, may experience setbacks on math scores during and shortly after the divorce although children do not experience negative effects on reading scores (Kim 2011). Still, long-term effects of divorce on academic outcomes are less certain. Children may experience negative effects on academic and psychosocial outcomes during and shortly after the divorce. On the other hand, with family support and quality home environments during transitional periods such as divorce, children may show resilience and not experience long-term effects of the event (Amato 2010).

Coleman (1988) also argued that the number of children in the family affects access to family social capital. Studies using the resource dilution model support this claim. Downey's (1995) resource dilution model asserts that parents find themselves dividing their time and resources among children. Therefore, if parents' time and resources are stretched

too thin across multiple children, their children may experience negative consequences.

Research shows that having large families may lead to less favorable outcomes than families with fewer children. Children from larger families have lower quality home environments, lower verbal skills (Parcel and Menaghan 1994a; Parcel and Menaghan 1994b), lower math and reading scores (Parcel and Menaghan 1994b), higher behavioral problems (Parcel and Menaghan 1993), and lower levels of education achievement (Blake 1989; Downey 1995).

Finally, Coleman (1988) argued that home environments represent a significant form of social capital that affects children's outcomes. Parents' efforts to build positive socialization environments lead to several positive outcomes for children. Specifically, a number of studies have shown that children with access to positive home environments have better academic outcomes (Parcel and Dufur 2001a), higher educational attainment (Israel, Beaulieu and Hartless 2001), better social adjustment outcomes (Parcel and Dufur 2001b), positive behavioral outcomes (Parcel and Menaghan 1993), and higher cognitive outcomes (O'Brien and O'Campo 2006). For example, using the National Longitudinal Survey of Youth Data (NLSY79), researchers found that home environment positively affects children's math and reading scores and social adjustment even when controlling for school capital (Parcel and Dufur 2001b; Parcel and Dufur 2001a). Israel, Beaulieu, and Hartless (2001) used the National Education Longitudinal Survey to study community, school, and home environment and found that home environment is a predictor of high school completion rates. Using the NLSY79 data, Parcel and Menaghan (1993) found that stronger home environments led to stronger social adjustment outcomes for children. Additionally, O'Brian and O'Caughy (2006) examined thirty-nine low social capital neighborhoods in Baltimore and found that

boys with better home environments have better cognitive outcomes. Research demonstrates that what parents do in the home matters. Quality home environments buffer the effects of lower school and neighborhood capital for children's academic outcomes.

Academic Outcomes of Children

Literature suggests that various family background characteristics are associated with children's outcomes. For example, several studies that examine the effects of family background on academic outcomes of children demonstrate that race, parental education level, maternal work hours, number of children in the home, household income, family structure, home environment, sex of child, and child's health, play a role in children's academic outcomes (Carbonaro 2006; Davis-Kean 2005; Downey 1995; Dufur and Troutman 2005; Parcel and Menaghan 1994a; Parcel and Dufur 2001a; Parcel and Menaghan 1994b). Research suggests that race still plays a pivotal role explaining the academic achievement gap (Carbonaro 2006). Furthermore, parental education has an indirect affect on children's academic outcomes (Davis-Kean 2005). Parents with higher education have higher educational aspirations for their children, so children fare better on math and reading scores. However, maternal work hours do not affect children's academic outcomes if children's mothers and fathers do not work long hours (Harvey 1999; Hill and O'Neil 1994; Parcel and Menaghan 1994a;). As suggested in the previous section, the number of children in a family negatively affects cognitive outcomes of children (Downey 1995). This is due to mothers having fewer resources to share given more children in the home. Other research points to how family structure influences children's academic outcomes because diverse family structures have differing access to human, social, and financial capital (Dufur and Troutman

2005). Home environment also plays an essential role in children's academic outcomes, including math and reading scores (Parcel and Dufur 2001a). Finally, child's sex and health have differing effects on children's academic outcomes. When Parcel and Menaghan (1994b) examined the contributing factors that predict children's math and reading scores, they found that there may not be a difference between boys and girls on math scores. However, boys score lower on reading tests compared to girls. In addition, they found that poor health tends to negatively affect boys', but not girls', reading scores.

Historical and Cultural Shifts to Work and Family Devotion

Maternal work outside the home increased from 45% to 75% since the 1960s (Mosisa and Hipple 2006). The increase of women leaving the home to work did little to change the work mothers remained responsible for at home. Hochschild (1989) named the work at home after a day of working outside the home the "second shift." In her study of American working families at the end of the 1980's, she claimed that women do a month of extra work a year compared to their male counterparts. More recently, Milkie, Raley, and Bianchi (2009) reexamined the second shift. They found that the second shift decreased for women to an average of a week and a half a year more than males. Still, much of the work in the home is divided along gender lines. Men are more likely to perform weekend flexible tasks such as home repair or lawn maintenance; women are more likely to perform daily tasks such as cooking and cleaning, which need to be completed regularly and by a schedule (Milkie and Peltola 1999). The largest increase for men's time use in the home is more involvement in childcare (Bianchi, Robinson and Milkie 2006).

The second shift of housework and childcare tasks is not the only concern for mothers. Since the 1950s, American mothers experienced an increase in intensive parenting ideals (Hays 1996). As work hours increased, maternal expectations for parenting increased. Hays (1996) calls the resulting phenomena “the cultural contradiction of motherhood.” First, mothers experienced heightened expectations for raising children, which include devotion to the psychological, emotional, and physical well-being of their children. Second, mothers are expected to live up to the cultural ideology of the ideal worker, completely devoted to work. Therefore, mothers face conflicting expectations of being a “good” mother and an “ideal” worker. As a result, both work and family devotions have become deeply embedded into our culture (Blair-Loy 2003). Women embody the culture expectations of work and family devotion and make choices for themselves and families according to societal expectations.

At the same time that intensive mothering ideology developed in U.S. culture, children’s leisure time changed from “free” play to organized leisure time (Lareau 2003; Zelizer 1985). In *Unequal Childhoods*, Lareau (2003) argues that changes in middle class parenting led to an increase of concerted cultivation. From the 1920s to the 1950s, most parents raised children according to the accomplishment of natural growth model. Parents encouraged children to play outside for hours at a time and to develop autonomy. Then middle class families made a shift towards practicing concerted cultivation. Middle class parents began relying on expert knowledge for childrearing advice, which encouraged developing children’s talents and cognitive abilities. Middle class parents had more financial resources to cultivate children’s well-being through organized activities. Lareau (2003) suggests that middle class families became preoccupied with increasing children’s cultural

and human capital. Today, many middle class parents practice concerted cultivation by involving children in numerous adult-led extra-curricular activities such as sports, music, and the arts. Parents spend much of their time outside of work taking their children to their various activities. Both parents are involved in the concerted cultivation efforts, but mothers experience the brunt of the time-intensive activity planning (Sayer 2005).

Due to the increase in intensive parenting and concerted cultivation, women experience a time divide between work and family. An increase in work and family demands gives women less time for leisure outside of the family. Mothers spend a lot of their “extra” time constructing leisure time for their families; mothers also report less leisure time for themselves compared to fathers (Deem 1996; Di Leonardo 1987; Mattingly and Bianchi 2003; Sayer 2005). In fact, mothers report on average a half an hour less leisure time per day than fathers (Sayer 2005). If mothers have less leisure time, they may not volunteer, which ultimately can affect socialization and human capital of children.

Maternal Volunteering and Effects on Academic Outcomes

A small body of research indicates that parental volunteering has effects on children’s academic outcomes. Much of the research at this time examines parental school involvement such as school volunteering or PTA participation and the effects on children. Zellman and Waterman (1998) studied 193 children from public and private elementary schools in Los Angeles, CA to determine if mothers’ school volunteering positively affects children’s reading scores. This study found that parental school involvement increased reading scores of elementary aged children. This was a small sample of 193 students and mothers and was not a nationally represented sample. Furthermore, they only examined one outcome of

maternal volunteering, reading scores of children. Perhaps looking at other academic outcomes would make their analysis stronger. Additionally, the fathers were absent from the analysis. The outcomes may differ if fathers are more involved in children's lives. Therefore, the relationship between maternal volunteering and paternal involvement may be a more complicated than Zellman and Waterman propose.

Two other studies examine how parental involvement at home and volunteering differ in the effects on children's academic outcomes. Muller (1995) used the National Educational Longitudinal Study (NELS) of 1988, a nationally representative sample, and found that children's math achievement scores are not affected by parent's school volunteering. Other parental involvement measures such as helping with homework, supervising children after school, and discussing school with children seem to be more important indicator of academic outcomes in the analysis. The only statistically significant school involvement indicator was Parent Teacher Association involvement, which positively affected children's math scores. In response to Muller's study, Desimone (1999) used the same data (NELS 1988) to determine if there were racial differences in the effects of school volunteering and PTA involvement on math and reading scores of eighth graders. The study found that parent school volunteering and paternal involvement at home affects math and reading scores, but the study also found differences among races. Both types of school involvement, volunteering and PTA involvement, positively affected math and reading scores for white children, but only PTA involvement improved the scores of blacks and Hispanics.

The above studies ignored two important research questions. First, they concentrate on *school* volunteering, but neglect to study how volunteer efforts elsewhere may help

children's outcomes. Second, the studies either do not examine paternal involvement or only examine the direct effects of school volunteering and parent involvement. However, the relationship may be more complicated. My substantive argument is that maternal volunteering can in fact help children's academic outcomes, but that also the interaction of maternal volunteering and paternal involvement may further enhance children's well-being.

Paternal Involvement

In much of the 20th century, paternal involvement meant financial responsibility to children. However, we have seen a cultural shift to more father involvement that not only includes fathers' involvement as financial providers, but also includes fathers' involvement as nurturing caregivers (Cabrera et al. 2000). Overtime, paternal involvement in the second shift has increased. Paternal involvement in childrearing has changed since the increase in maternal work outside of the home. In 1965, fathers spent 25% of the time women did on childrearing; in 1998, father's time spent childrearing increased to 56% of the time women did on childrearing (Bianchi 2000). These changes potentially give more leisure time for women.

Even though we have seen a shift towards more paternal involvement, the changes have not led to equal partnership for mothers and fathers. We still hold onto a cultural ideology of what constitutes a "good" parent. Fathers are the breadwinners and mothers are the best primary caregivers for children. Because of this ideology, mothers sometimes adopt the opinion that fathers cannot do as well with childcare as mothers. Sometimes, mothers use maternal gatekeeping practices and place barriers in front of men that block their paternal involvement as caregivers (Allen and Hawkins 1999; Gaunt 2008). Mothers who allow

fathers to care for children may feel the need to be hyper-vigilant and hyper-critical towards fathers (Gaunt 2008). This may lead fathers to withhold time from children or limit time to “babysitting” at the request of the mother. Still, a disparity exists between paternal time and maternal time with children. Mothers are more likely to spend time alone with their children; fathers are more likely to spend time with their children when the mother is physically in the house (Sayer 2004).

Nevertheless, paternal involvement affects outcomes for children. Higher paternal involvement leads to better behavioral outcomes (Amato and Rivera 1999), psychosocial well-being (Pleck 2004), psychological well-being (Furstenberg and Hughes 1995), and financial outcomes (Amato and Sobolewski 2004; Harris, Furstenberg and Marmer 1998) for young and adolescent children. Specific studies on children’s academic outcomes suggest that paternal involvement is important for children’s academic success (Cooksey and Fondell 1996; Fagan and Iglesias 1999; Harris, Furstenberg and Marmer 1998; Paulson 1994). For example, Paulson’s (1994) study of 247 adolescent boys and girls reports that paternal involvement is as important as maternal involvement for predicting children’s cognitive outcomes. Fagan and Iglesias (1999) investigated at-risk families in a Head Start program by providing paternal involvement opportunities for fathers, which included school volunteering and individual father-child activities. They found that children of the fathers who increased their involvement had higher math readiness for elementary school. Using the National Survey of Family and Households to examine the effects of the quantity of time spent with children, Cooksey and Fondell (1996) found that if fathers spend more time with their children, father’s report better grades for their children. Using the National Survey of

Children, Harris, Furstenberg, and Marmer (1998) found that long-term paternal involvement throughout adolescence can affect positively children's academic achievement and facilitate transition into adulthood.

From the literature, we know that there is a direct effect of maternal volunteering, home environments, and paternal involvement on academic outcomes, but research has neglected the interactive effects of these types of family social capital on children's well-being. Because maternal volunteering and paternal involvement positively affect children's outcomes, I argue that both can work together to improve children's academic outcomes. Furthermore, because home environments are important for predicting children's outcomes, I suggest that the interaction of maternal volunteering and home environment may boost academic outcomes.

HYPOTHESES

Social capital within the family at home and in the community plays an important role in the development of children. Presumably, building social capital at home and in the community can help children. Until now, maternal school volunteering and paternal involvement, two types of social capital, were examined separately to predict academic outcomes of children (Fagan and Iglesias 1999; Harris, Furstenberg and Marmer 1998; Muller 1995; Paulson 1994; Zellman and Waterman 1998). We understand the effects of maternal school volunteering and paternal involvement on children's academic outcomes. Both maternal volunteering and paternal involvement, separately, help increase children's outcomes. The primary focus of this project examines maternal volunteering effects on academic outcomes. However, I add to the literature by testing the interactive effect of both

maternal volunteering and paternal involvement. Both can work together to further enhance children's math and reading scores. Hence, I hypothesize that paternal involvement becomes a moderating variable in the analysis.

I test the following hypotheses:

H1a: Controlling for maternal characteristics and child characteristics, maternal volunteering has a positive effect on children's PIAT math scores.

H1b: Net of all other effects, an interaction between paternal involvement and maternal volunteering has a positive effect on PIAT math scores.

H2a: Controlling for maternal characteristics and child characteristics, maternal volunteering has a positive effect on children's PIAT reading recognition scores.

H2b: Net of all other effects, an interaction between maternal volunteering and paternal involvement has a positive effect on PIAT reading recognition scores.

To further explore the role of family social capital and maternal involvement, I test the interactive effects of maternal volunteering and home environment on math and reading outcomes of children. The family social capital literature has not tested whether maternal volunteering and home environment can boost children's academic scores by providing intergenerational closure. However, Coleman (1988) argues that this is an important relationship; he contends that social capital within the home and community ties create intergenerational closure and affect human capital of children. Consequently, the home environment may be a moderating variable that helps improve children's outcomes.

Therefore, I test the following hypotheses:

H1c: Net of all other effects, an interaction between maternal volunteering and home environment has a positive effect on children's PIAT math scores.

H2c: Net of all other effects, an interaction between maternal volunteering and home environment has a positive effect on PIAT reading recognition scores.

DATA AND MEASURES

Data

This project used the data from the 2006 National Longitudinal Study of Youth (NLSY), which included 12,686 respondents that represent young men and women ages 14 to 21 in 1979. The data were collected from 1979 to 1994 annually and then after 1994 biannually. The NLSY is a nationally representative multi-staged stratified area probability sample (Frankel, Williams and Spencer 1983). The sample involved three sampling frames. The first was a cross-sectional sample (n=6,111). The second was an oversampling of blacks, Hispanics and economically disadvantaged non-blacks and non-Hispanics (n=5,295). Third, the NLSY chose a sample of military men and women (n=1,280). However, in 1984, NLSY dropped the samples of the oversampling of blacks, Hispanics and economically disadvantaged non-blacks and non-Hispanics, and the military cohort (NLSY79). Consequently, the NLSY accounted for the losses in the sample weights. The data were collected through personal interviews, interviewer assessments, and self-administered questionnaires, using CAPI (Computer Assisted Personal Interview). In 1986, NLSY79 began collecting data on the children of female cohort members, including assessments of their children's home environments and their social and cognitive outcomes. The 2006 data contained linked information for mothers (n=1,712) and their age 0 to 14 year-old children

(n=1,972), who lived with their mothers either part-time or full time. Data included demographic characteristics, maternal volunteering, children's home environments, paternal involvement, and children's math and reading scores.

In this study, I examined children ages 10 to 14 for several reasons. First, this group of preadolescent and early adolescent children had enough formal schooling in 2006 to study academic outcomes. Furthermore, these children have comparable academic outcomes due to the narrow range in age. Additionally, 10 to 14 year-olds self-reported their father's involvement, which allowed me to include the child's perceived paternal involvement in the analysis. Then, I chose this group of children in 2006 because the NLSY began asking mothers about their volunteer experience, an independent variable in this project. Finally, this group of 10-14 year old children is unique since mothers are more likely to volunteer their time when children are older because mothers of older children tend to have more time for volunteer efforts than mothers of younger children (Rotolo and Wilson 2007). Thus, examining this group of children gives me the best sample for my present research questions.

The primary sample for this project included mothers (n=903) and their children ages 10 to 14 (n=1,089) in 2006. Because 5.4% of the data measuring children's academic outcomes were missing, I dropped those children from the sample. The final sample included 850 mothers and 1,030 children. Moreover, the sample included all mothers' children ages 10 to 14. As a result, I adjusted for clustering effects in all the analyses. Finally, the mothers and children's data were weighted to be representative of American mothers aged 41 to 49 and children aged 10 to 14.

Measures

Dependent Variables

Table 1 gives a brief description of all the variables in this analysis. Math and reading assessments from the nationally recognized Peabody Individual Achievement Test (PIAT) measure 10-14 year olds' academic outcomes. In other research, the PIAT assessments measure academic outcomes of children of the NLSY mothers (Cooksey 1997). Each of the PIAT assessments has high reliability and validity (Mott 2004). The first dependent variable, the PIAT Math standardized scores, taps the ability of basic numerical recognition to advanced geometry and trigonometry concepts (NLSY79 2006). The second dependent variable, the PIAT Reading Recognition standardized scores, taps word recognition and pronunciation.

Independent Variables

This project included two independent variables in the analyses. The first independent variable for this project includes maternal volunteering status. For this project, I was interested in the volunteer status of mothers, not the hours of volunteering or specific volunteer groups⁴. In 2006, NLSY began asking mothers about their civic engagement, including their volunteer work. They were asked, "In the past 12 months did you do any unpaid volunteer work?" The mothers reported "yes" or "no."

⁴ I tested specific volunteer groups (community, school, and church) in separate OLS regression analyses. The slopes for specific volunteer groups were statistically significant ($p < .05$). I then conducted significance-tests to determine if the slope coefficients were different from one another. There were no statistically significant differences among the slopes for specific volunteer groups. I also conducted OLS regression analyses predicting math and reading scores from maternal volunteer hours and found that the slopes for maternal volunteer hours were not statistically significant.

The second independent variable is paternal involvement. Father involvement in this study is a multidimensional scale that measures quantity and quality of the father's involvement. In previous research, Carlson (2006) used the NLSY paternal involvement indicators to measure the quality and quantity of paternal involvement. In that study, the seven indicator measurement obtained a Chronbach's alpha of .85. The paternal involvement variable includes seven indicators of child-reported paternal (father, step-father, and father-figure) involvement. Each indicator identifies a dimension of paternal involvement. The first four indicators determined how often father talks over important decisions with the child, listens to the child's side of the argument, knows who the child is with when not home, and misses important events or activities. These indicators have three possible responses: hardly ever, sometimes, and often. The fifth indicator measures the child's perception of amount of time the father spends with the child with three possible responses: wish he spent more time with me, spends enough time with me, and spends too much time with me. The sixth indicator measures how close the child feels to father with three possible responses: not very close, fairly close, and extremely close or quite close. Finally, the seventh indicator measures how well father and child share ideas and talk about important things with three possible responses: not very well, fairly well, and extremely well or quite well. I conducted an exploratory factor analysis to determine how the seven measures of father's involvement loaded on one or more factors. The Eigen value for the factor tapping paternal involvement was 3.07. The seven items loaded at above .50 (range .52 to .74) and were retained for the factor identified as *paternal involvement*. Further, an item analysis demonstrated that the

seven indicator index was appropriate to measure the paternal involvement construct (Chronbach's Alpha=.89).

Control Variables

Maternal characteristics, including race, education level, work hours, number of children living in the household, household income, and marital status, are control variables in the analysis. I measured race as a categorical variable. In the NLSY for both mothers and children, the race variable has three categories: Hispanic, black, and white. I recoded the race variables into two dummy variables for mothers: white and other⁵. The reported race of mother and child were the same for both groups, so I used one race variable in the analysis. I measured maternal education with years of education as of 2006. I measured maternal work hours from the number of hours worked per week. I constructed a variable for the total number of children living in the household (biological, non-biological, adopted, and step children). For household income, I created a variable that measures the yearly income of the mother and her spouse. I divided the total household income by 10,000 to assure appropriate scaling in the analysis. In the NLSY, marital status has five categories (never married, married, divorced, separated, and widowed). I created a dummy variable for marital status: "Married" was the coded as "1." Mother's who reported that they were never married, divorced, separated, and widowed were coded as "not married," the reference category.

⁵ The models in this study found that the slope for white children predicted higher math and reading scores than the "other" category, net of all other variables in the model. I conducted additional analyses that added the dummy variable, Hispanic, to predict math and reading scores of the children in the sample. Results demonstrated that there was a negative relationship ($p < .05$) between Hispanic race and children's reading and math scores, net of the effect of all other variables in the model. From this additional analysis, I concluded that there is a difference between Hispanics and blacks and between whites and blacks for math and reading scores, net of all other variables in the model.

Child characteristics, child's sex, health, and home environment, are also control variables. For child's sex, I constructed a dummy variable (male) from the original child's sex variable: female is the reference category. For child's health, I created a dichotomous variable from two mother reported child health variables previously used by Parcel and Menaghan (1994a). In the NLSY, mothers reported whether or not their child had any have any physical, emotional, or mental condition that limits or prevents his or her ability to do regular school work. Furthermore, the mothers were asked if the child had any physical, emotional, or mental condition that limits or prevents his or her ability to do usual childhood activities such as play or participate in games or sports. If the mother answered "yes" to either question, the variable was given a "1" value. All others were given a "0."

I measured home environment with the standardized score for the Home Observation for Measurement of the Environment (HOME) developed by Bradley and Caldwell (1984). The HOME index from the NLSY was used previously to measure family social capital (Parcel and Dufur 2001a). The index for this project includes a set of 64 indicators from the motherhood supplement in 2006. The HOME scale has high reliability and validity, usually between the Chronbach's alpha level of .70 and .80 (Mott 2004; NLSY79 2006). HOME includes questions and observations concerning the overall quality of the home environment, maternal emotional and verbal responsiveness, maternal acceptance and involvement with the child, and the materials in environment conducive to learning.

-Table 1 about here-

Missing Data

I imputed on the missing data across all independent and control variables using the multiple imputation technique. As noted above, I did not impute on the dependent variables. SAS imputed on five possible imputed data sets by replacing each missing value with a set of possible values. The new imputations represent a random sample of the missing values (Rubin 1996). To allow appropriate imputations, I permitted SAS to use all independent and dependent variables' and their valid data points to predict the imputed data values.

Before imputing on the paternal involvement variables, I considered two potential issues with the child reported paternal involvement. First, the variables in this index had at most 23.7% missing data from non-responses, valid, or invalid skips. I considered that some of this missing data could be from children without a present father. They may, however, have a step-father. Consequently, I used the set of child reported step-father involvement measurements provided in the NLSY to systematically replace missing father involvement data. These indicators were the same as the father involvement variables mention above except the children were asked about their step-father involvement. However, I still had 22% missing responses in the data. Some of the data may be missing because the child does not have a father, step-father, or father-figure. So to be careful with imputations, I constructed new paternal involvement variables. This new variable accounted for a mother's reported response to the question: "Does the child have a biological father, step-father, father-figure, or no father -figure in their life." I set all the paternal involvement indicators to "0" if the mother reported "no father-figure" in the child's life. This step safeguarded against imputing

inappropriately on paternal involvement in case the child had no father, step-father, or father figure in their life. Finally, I imputed on the 16.6% remaining missing responses with the multiple imputation technique described in the above paragraph.

RESULTS

Descriptive Statistics

Table 2 outlines the descriptive statistics pertaining to the NLSY subsample of children ages 10-14 and their mothers used in the analysis. The table includes appropriate means, standard errors, and ranges of the dependent, independent, and control variables. The mean for the PIAT Math Assessment, the first key independent variable, was 108.98. The mean score for the PIAT Reading Recognition Assessment, the second key independent variable, was 110.

In the entire sample of mothers (n=850), 43.79% reported that they volunteered in the last year⁶. The mean for paternal involvement was 1.69. Maternal race included 82.06% white and 17.94% “Other races/ethnicities.” The average years of maternal education were 14.24, and the average number of hours worked per week was 35.66 hours. The mean for total household income was 70,089 dollars. The mean number of children living in the household was 2.39; 76% of the mothers are married. Furthermore, 52.08% of the children’s sample was male. Only 4.22% of the children had health problems that prevented them from attending school or physical activity. Finally, the sample of children (n=1030) scored an average of 1002.74 on the HOME observation.

⁶ The percentage, 43.79 %, seems like a high rate of maternal volunteering compared to Tiehen’s (2000) finding of a 9.4% volunteer rate. Please note that Tiehen constructed the measurement of maternal volunteering from 24 hour period time diaries, and the current project’s volunteer measure asked mothers about their volunteer work in the last year, a longer period of time.

-Table 2 about here-

Pearson Correlations

Table 3 presents the Pearson correlations among the variables of interest. The results of this bivariate analysis showed that the PIAT Math and Reading Recognition scores were positively correlated with maternal volunteering. Furthermore, children who reported higher paternal involvement were predicted to score higher on math and reading recognition. Math and reading recognition scores were positively correlated with the maternal characteristics of race (being white) education level, marital status, and total household income. Math and reading recognition scores were negatively correlated with maternal work hours. Number of children in the household was negatively correlated with the reading recognition scores. However, sex of child was positively correlated with only math scores, and child's health was negatively correlated with only math scores. Children with higher home environment scores were more likely to score higher on math and reading. Paternal involvement was positively correlated to maternal volunteering. Finally, maternal volunteering was positively correlated with HOME Environment.

-Table 3 about Here-

OLS Regression Analysis

I utilize Ordinary Least Squares (OLS) regression for this project. This type of analysis is appropriate because the relevant variables in this project are continuous variables. Then using OLS regression models, I progressively added blocks of variables to the analysis to predict academic outcomes (math and reading recognition) for 10-14 year olds. Model I includes maternal volunteering. Model II includes maternal volunteering and paternal

involvement. Model III includes maternal volunteering, paternal involvement, and maternal characteristics. Model IV includes maternal volunteering, paternal involvement, maternal characteristics, and child characteristics. Model V tests the interaction of maternal volunteering and paternal involvement, as well as the interaction of maternal volunteering and home environment. OLS regression likely underestimated the standard errors because children in the same family are more similar to one another than the same number of children chosen independently. Therefore, I used the SAS "CLUSTER," that clustered the children in the analysis by the Mother's I.D. number. This procedure corrected for the lack of independence in the sample.

Because I used the multiple imputation technique for missing data, I had five data sets with imputed values. I conducted an OLS regression for each imputed data set. The output included parameter estimates and standard errors for each regression analysis. Then I conducted another analysis that estimated the parameters and standard errors for each regression using the variance and covariance of all the parameter estimates and standard errors. Finally, this analysis technique calculates the values for R^2 for each of the five imputed data sets' models. I averaged the R^2 s to determine the overall R^2 for each model. The procedure does not calculate the adjusted R^2 for each model, so I only present the R^2 for the models.

PIAT Math Scores

I first examined maternal volunteering effects on math scores of 10 to 14 year olds. Table 4 presents the results for this analysis. All models were statistically significant indicating that the data are a good fit for the models. Model I predicted math scores from

maternal volunteering. The slope for maternal volunteering was statistically significant ($p < .05$). If mothers volunteered, their children's predicted score on the PIAT math was 5.63 points higher than the intercept of 106.67. Model II added paternal involvement to the analysis. In this model, maternal volunteering remained statistically significant ($p < .001$). As expected, paternal involvement positively affected children's math scores. Model II, which included maternal volunteering and paternal involvement, better predicted math scores than Model I.

After adding the first set of control variables, maternal characteristics, in Model III, maternal volunteering continued to positively affect math scores. Race, maternal years of education, and marital status positively affected math scores. Number of children negatively affected math scores. Net of the effects of paternal involvement and maternal characteristics, maternal volunteering continued to affect math scores positively. Although the effect of maternal volunteering drops in size, this drop is a function of the combined effects of the significant control variables. In addition, the effect of paternal involvement becomes non-significant. An Incremental-F test between Model II and Model III demonstrated that Model III was a better fit for the data than Model II ($df = 6, 1128, F = 16.06, p < .05$). Adding the six maternal characteristic variables helped improved my ability to predict math scores of 10 to 14 year olds.

Model IV included maternal volunteering, paternal involvement, maternal characteristics, and child characteristics. The slope for maternal volunteering continued to be statistically significant at the .05 level. Race, maternal years of education, marital status, sex of child, and HOME environment positively affected math scores. Number of children no

longer negatively affected children's math scores. Therefore, Hypothesis 1a was supported; net of all other effects of the model, maternal volunteering positively affects PIAT math scores of 10 to 14 year-olds. The Incremental-F test shows that Model IV was a better fit to the data than Model III ($df=3$, 1119, $F=9.88$, $p<.05$). Adding the three child characteristic variables helped improve my ability to predict math scores of 10 to 14 year olds.

-Table 4 about here-

Model V presents the results from adding the interaction terms: maternal volunteering and paternal involvement and maternal volunteering and home environment. The slope for maternal volunteering and paternal involvement was statistically significant ($p<.05$). The interaction of maternal volunteering and home environment was not statistically significant ($p=.15$). Therefore, hypothesis 2b was not supported in the data. To determine if there was an interaction between maternal volunteering and paternal involvement, I conducted an Incremental-F test. The F-statistic for this test was 5.62 which was higher than the critical value of 3.00 with 2, 1117 df ($p<.05$). The data supported hypothesis 1b; the interaction of maternal volunteering and paternal involvement affects math scores.

To determine the nature of the interaction, I calculated conditional slopes for math scores of a healthy male child whose mother was white and married. Figure 1 shows the interaction for the conditional slopes. Each conditional slope considered the volunteer status of the mother (volunteer or non-volunteer). Maternal volunteering did boost math scores when a child had no paternal involvement. If the child had little or some paternal involvement, the math scores continued to improve if mothers volunteered. However, there was a threshold for the non-additive effects. When a mother volunteered and a father was

highly involved, the effect on math scores was slightly less than high paternal involvement and no maternal volunteering scores for children. Therefore, the effects of high paternal involvement compensated for children's math scores if mothers did not volunteer.

-Figure 1 about here-

PIAT Recognition Scores

I then tested maternal volunteering effects on children's reading recognition scores. Table 5 presents the results for the first set of models predicting PIAT reading recognition scores. All models had statistically significant F-statistics, demonstrating that the models were a good fit for the data. Model I predicted reading recognition scores from maternal volunteering. Maternal volunteering positively affected children's PIAT reading recognition scores ($p < .05$). If mothers volunteered, their children's predicted score on the PIAT reading recognition test was 6.05 points higher than the intercept of 107.61. In Model II, maternal volunteering continued to positively affect reading recognition scores ($p < .05$). Paternal involvement positively affected reading scores ($p < .05$). I concluded that this model was a better fit for the data than Model I because paternal involvement was statistically significant.

In Model III, I added maternal characteristics to the previous model. Maternal volunteering continued to be statistically significant ($p < .05$) although the size of the effect drops substantially. Paternal involvement's slope is no longer statistically significant in Model III. Consistent with the PIAT Math models, race, maternal years of education, and marital status positively affected reading recognition scores, and number of children negatively affected reading recognition scores. Net of paternal involvement and maternal characteristics, maternal volunteering continued to positively affect reading recognition

scores. An Incremental-F test confirmed that Model III was a better fit for the data than Model II ($df=6, 1128, F=23.34, p<.05$). The six maternal characteristic variables helped improve my ability to predict reading recognition scores of 10 to 14 year olds.

In Model IV, I added child characteristics to the model. Maternal volunteering continued to be statistically significant ($p<.05$). Race, maternal education years, and marital status continued to positively affect reading scores. The negative relationship between number of children and reading scores continued to be statistically significant. The child characteristics, sex of child and HOME environment positively affected reading recognition. Hypothesis 1a was supported in the data; net of all other effects in the model, maternal volunteering positively affects reading recognition scores. An Incremental-F test ($df=2, 1119, F= 5.94, p<.05$) found that Model IV was a better fit for the data than Model III. Adding child's sex, health, and home environment, helped improve my ability to predict reading recognition scores.

-Table 5 about here-

Model V included maternal volunteering, paternal involvement, maternal characteristics, child characteristics, and two interaction terms. The slope for maternal volunteering and paternal involvement was statistically significant ($p<.05$). The slope for interaction of maternal volunteering and home environment was not statistically significant ($p=.27$). Therefore, hypothesis 4b is not supported in the data. The F-statistic for Incremental-F test for the interactive effects was 4.76 which was higher than the critical value of 3.00 with $df 2, 1117 (p<.05)$. Therefore, hypothesis 3b was supported in the data;

there is an interaction effect of maternal volunteering and paternal involvement when predicting reading recognition scores.

Figure 2 presents the interaction effects of the conditional slopes for children's reading outcomes. I calculated conditional slopes for reading recognition scores of a healthy male child whose mother was white and married and volunteers. As before, each conditional slope considered the volunteer status of the mother (volunteer or non-volunteer). Maternal volunteering boosted reading scores when a child had no paternal involvement. If the child had little or some paternal involvement, the reading scores were higher if mothers volunteered. Similar to the previous interactive effects of the math model, there was a threshold for the non-additive effects. When mothers volunteered and children experienced higher paternal involvement, the effect of maternal volunteering reduced to no effect. Therefore, the effects of paternal involvement compensated for children's reading scores if mothers did not volunteer.

-Figure 2 about here-

DISCUSSION

This project used the NLSY79 data from 2006 to investigate how maternal volunteering, a form of social capital, affects children's academic outcomes. Drawing from Coleman's (1988) theory of parental social capital and its effects on children's human capital, I add to the literature by showing how several types of family social capital benefit children's academic outcomes. In particular, I extend the present literature by examining how maternal volunteering can enhance children's math and reading scores. Additionally, I evaluate the effects of two interactions: 1) maternal volunteering and paternal involvement

and 2) maternal volunteering and home environments. The interaction effects tested whether maternal volunteering and other forms of social capital combine to improve children's academic outcomes.

Hypothesis 1a suggested that maternal volunteering would affect children's math outcomes, net of the effects of maternal and child characteristics. This hypothesis was supported in the data. If mothers reported that they volunteered, children had higher math scores than those of mothers who did not volunteer, net of all other effects in the model. Furthermore, Hypothesis 2a was supported in the data. Even after I controlled for maternal and child characteristics, maternal volunteering positively affected child's PIAT reading recognition scores. These findings suggest that even net of maternal and children characteristics, maternal volunteering can be instrumental in improving children's academic outcomes.

The results support much of Coleman's (1988) social capital theory, which posits that social capital in the family plays an important role in improving children's academic outcomes. Parental investment of time in the home and community builds social capital, and children benefit from the access to family social capital. Because children's math and reading scores saw a substantial increase if mothers volunteer, maternal investment of time in volunteer work can have payoffs for children's human capital outcomes. Furthermore, consistent with Coleman's emphasis on the importance of social capital within the home, paternal involvement and home environment, two other forms of family social capital, had positive effects on children's academic outcomes. This too has been further supported in the literature (Cooksey and Fondell 1996; Fagan and Iglesias 1999; Harris, Furstenberg and

Marmer 1998; Parcel and Menaghan 1994a; Parcel and Menaghan 1994b; Paulson 1994). As a result, maternal investment in home environment, paternal involvement, and maternal volunteering showed similar positive effects on children's academic outcomes. However, paternal involvement only affected children's math and reading scores until I controlled for maternal and child characteristics.

Coleman stressed the importance of family structure and stability for supporting children's human capital outcomes. This project found that indeed family background characteristics such as race, maternal education level, number of children in the home, marital status, and sex of child were also important factors for explaining children's math and reading scores. As previous studies found (Carbonaro 2006; Davis-Kean 2005; Downey 1995; Dufur and Troutman 2005; Parcel and Menaghan 1994b), these indicators had statistically significant effects on children's outcomes. In this project, being white, maternal education level, being married, and being a male child positively affected academic outcomes. However, work hours did not affect children's outcomes, which is consistent in other research (Harvey 1999; Hill and O'Neil 1994; Parcel and Menaghan 1994a). The number of children in the household negatively affected children's math scores in Model III, but the strength of the relationship was stronger in the Model IV for predicting reading scores. This finding supports Downey's (1995) resource dilution model, which suggests that maternal resource dilution may affect children's academic outcomes. However, the results show that having more children may not affect children's reading scores after accounting for child characteristics (sex and health of child and home environment).

This project also calls attention to how maternal volunteering and paternal involvement work together to enhance children's outcomes. Both hypothesis 1b and 2b were supported in the data. The interaction between maternal volunteering and paternal involvement was statistically significant in the math and reading models. Therefore, paternal involvement acts as a moderating variable in this analysis, and the interactive effects follow a compensating model. Children of mothers who volunteer but who have no paternal involvement fare better in math and reading than children with mothers who do not volunteer and who have no paternal involvement. In addition, when maternal volunteering is high, the effects of paternal involvement reach a point of diminishing returns, and vice versa. Thus, the findings support previous studies that paternal involvement in children's lives is very important (Fagan and Iglesias 1999; Harris, Furstenberg and Marmer 1998; Paulson 1994). However, the present findings describe a more complicated relationship than suggested before by considering the interactive effects.

Home environments had an additive effect on children's math and reading scores. However, the data did not support hypothesis 1c and 2c, which suggested that there was an interactive effect for maternal volunteering and home environment when predicting children's math and reading scores. Results show that the interaction was not statistically significant, so I cannot conclude that home environment and maternal volunteering can work together to enhance children's outcomes. The lack of interactive effects for maternal volunteering and home environment does not support Coleman's (1988) claim about the benefits of intergenerational closure, which occurs when parents build relationships with children in the home and with other parents and adult community members. Because parents

build relationships in the community, this builds a learning environment conducive to building children's human capital. Even though I could not find support for the benefits of intergenerational closure in regards to maternal volunteering and home environment, other research suggests that children do experience intergenerational closure effects from home environment and neighborhood, community, and school social capital interactions (Furstenberg and Hughes 1995; Israel, Beaulieu and Hartless 2001; Parcel and Dufur 2001b; Parcel and Dufur 2001a).

The bulk of the literature regarding maternal volunteering looks at its effects on children's volunteering. My study is distinctive because examining how maternal volunteering affects children's well-being can contribute to the family social capital literature, especially when considering the benefits of intergenerational closure. Yet, maternal volunteer work is often studied in the context of how it affects children's civic engagement. In fact, much of the current research on parental volunteering and children focuses on the social transmission model of volunteering. The model posits that children of parents who volunteer see parents as civic role models; hence, children learn civic engagement from their parents (Beckkers 2007; Janoski and Wilson 1995; Kelly 2006). Therefore, if parents volunteer, children are more likely to volunteer. This model does a good job explaining how parents transmit their volunteering behavior to their children. However, this does not address Coleman's (1988) concern of the use of parental social capital to improve children's well-being.

Limitations of Current Study

This analysis relied on cross-sectional data from the 2006 wave of the NLSY. Therefore, it does not examine long term outcomes of maternal volunteering. Possibly examining how maternal volunteering affects children over time would yield stronger, or differing, results. This is possible now because the 2010 NLSY79 data are available and mothers were asked about their volunteer experiences in that year. In addition, children's math and reading scores are available for 2010. However, because this project conducted with cross-sectional analysis, I must consider possible selection effects. Women with higher well-being, education, and socioeconomic status may do more volunteer work (Thoits and Hewitt 2001; Wilson and Musick 1997). Furthermore, people who have extensive social networks tend to volunteer more than those with smaller social networks (Wilson and Musick 2000). Volunteers could be selecting into this activity due to the expectations and norms of their social characteristics. Thus, instead of volunteer work leading to positive outcomes, the positive "effects" may be at least partly spurious.

In this study, I was limited to addressing maternal volunteering and children's academic outcomes, and I was not able to control for the effect of paternal volunteering. The 2006 NLSY asks men and women about their volunteering experiences, yet data on children are linked only to their mothers, not fathers. In 1986, the NLSY79 began collecting data on mothers and their children, but did not include a questionnaire concerning children for the original young men who became fathers after 1979. This may limit my analysis to only mothers, but my study was useful to determine that maternal volunteering matters to children's well-being. Furthermore, I address the importance of father involvement by including a paternal involvement indicator in the analysis. Perhaps examining how paternal

volunteering affects children's well-being with different set of data should be a future project to better understand the relationship between parental volunteering and children's academic outcomes.

This project included two interactions in the analyses: maternal volunteering and paternal involvement and maternal volunteering and home environment. However, other interactive effects could be investigated in the context of this project. Perhaps examining the interactive effects of maternal volunteering and marital status could lead to a better understanding of children's outcomes. The effects on children's outcomes may differ for unmarried mothers' volunteer efforts compared to married mothers' volunteer efforts. Research demonstrates that single mothers have less access to social capital (Ciabattari 2007), and this could have consequences for children. Arguably, single mothers have less time for volunteering than married mothers. However, additional analysis could consider how volunteering can help single women build social capital and at the same time improve children's outcomes.

Future Research

Even though this project was successful with cross-sectional data, future research should examine maternal volunteering and the effects on children's math and reading scores longitudinally. The first year that the NLSY asked questions of mothers about their volunteer work was 2006. Consequently, they continued to collect data from maternal volunteering in 2010. Therefore, investigating the long term effects of maternal volunteering is possible. Completing this analysis may help us gain a better understanding of how this type of social capital benefits children long-term. However, going beyond 2010 examining math and

reading scores with a longitudinal study may prove difficult. The children in the NLSY are getting older and after the age of 14, they no longer collect data on math and reading scores. However, they do collect data on grade point averages and college attendance for the older children. Therefore, I suggest a future project examining the effects of longer-term maternal volunteering on young adult academic outcomes. This would expand our knowledge on this type of social capital and children's academic outcomes.

Finally, does paternal involvement affect the likelihood of maternal volunteering? This research question would consider the impact of the historical increase in paternal involvement in the last four decades. However, that research question was beyond the scope of the thesis. Possibly, parental involvement alleviates some of the time crunch that women experience. Mothers could be more likely to volunteer if fathers are more involved in the day to day activities of children. The correlations presented in this project show a statistically significant association between these two variables. This relationship has not been tested. Therefore, testing the casual relationship between paternal involvement and maternal volunteering would extend our understanding of this phenomenon.

CONCLUSION

This project adds to the existing research on maternal volunteering and family social capital. Social capital in the forms of maternal volunteering, paternal involvement, and home environment plays a pivotal role in supporting children's achievement. The implications for this research on home, schools, neighborhoods, and communities is great, especially after we consider the historical increase in work and family demands and the decrease of volunteer work in communities. Yet, this project suggests that maternal volunteering still holds an

important role in a family's life. What is notable about this study is the role that paternal involvement plays in the current research problem. High paternal involvement can compensate for maternal non-volunteering, which can alleviate the need for mothers to concentrate their leisure time on volunteer efforts. On the other hand, this current study implies that with little or no paternal involvement, maternal volunteering can have a positive effect on children. These two findings have important implications; if mothers have little paternal involvement, they may not have the time to volunteer. If mothers have high paternal involvement, they potentially have more time to volunteer, but the predicted improvements for academic outcomes are reduced.

Nevertheless, let me point out that this research may have implications for mothers too. Volunteer work provides important connections to communities, builds social networks, and enhances well-being for mothers. Volunteer efforts can connect mothers to better job opportunities, which can improve families' financial well-being (Wuthnow 1998). Volunteering positively affects women's life satisfaction, self-esteem, level of happiness, physical health, and mental health outcomes (Thoits and Hewitt 2001). Therefore, volunteer efforts are important for mothers' well-being, not only children's well-being. If mothers consider the improvement in their own lives and children's lives from volunteering, they may find themselves making time to increase their involvement in the schools, communities, and churches.

REFERENCES

- Allen, Sarah M. , and Alan J. Hawkins. 1999. "Maternal Gatekeeping: Mothers' Beliefs and Behaviors That Inhibit Greater Father Involvement in Family Work." *Journal of Marriage and Family* 61:199-212.
- Amato, Paul R. 2010. "Research on Divorce: Continuing Trends and New Developments." *Journal of Marriage and Family* 72(3):650-66.
- Amato, Paul R., and Fernando Rivera. 1999. "Paternal Involvement and Children's Behavior Problems." *Journal of Marriage and Family* 61(2):375-84.
- Amato, Paul R., and Jule M. Sobolewski (Eds.). 2004. *The Effects of Divorce on Father's and Children*. Hoboken, NJ: John Wiley and Sons.
- Baker, Peter. 2009. "Obama Signs Volunteer Bill With Nod to Kennedy Era " Pp. A17 in *The New York Times*. New York: The New York Times Company.
- Beckkers, Rene. 2007. "Intergenerational Transmission of Volunteering." *Acta Sociologica* 50(99-114).
- Bianchi, Suzanne. 2000. "Maternal Employment and Time with Children: Dramatic Change or Surprising Continuity." *Demography* 37(4):401-14.
- Bianchi, Suzanne M., John P. Robinson, and Melissa A. Milkie. 2006. *Changing Rhythms of American Family Life*. New York: Russell Sage Foundation.
- Blair-Loy, Mary. 2003. *Competing Devotions: Career and Family among Women Executives*. Harvard University Press: Cambridge, MA.
- Blake, Judith. 1989. *Family Size and Achievement*. Berkeley, CA: University of California Press.

- Brooks-Gunn, Jeanne, Wen-Jui Han, and Jane Waldfogel. 2002. "Maternal Employment and Child Cognitive Outcomes in the First Three Years of Life: The NICHD Study of Early Child Care." *Child Development* 73(4):1052-72.
- Bourdieu, Pierre. 1986. "The Forms of Capital." Pp. 96-135 in *The Sociology of Economic Life, 3rd edition*, edited by M. Granovetter and R. Swedberg. Boulder: Westview Press.
- Cabrera, Natasha J., Catherine S. Tamis-LeMonda, Robert H. Bradley, Sandra Hofferth, and Michael E. Lamb. 2000. "Fatherhood in the Twenty-First Century." *Child Development* 71(1):127-36.
- Carbonaro, William. 2006. "Public-Private Differences in Achievement Among Kindergarten Students: Differences in Learning Opportunities and Student Outcomes." *American Journal of Education* 113:31-65.
- Carlson, Marcia J. 2006. "Family Structure, Father Involvement, and Adolescent Behavioral Outcomes." *Journal of Marriage and Family* 68(1):137-54.
- Coleman, James S. 1988. "Social Capital in the Creation of Human Capital." *American Journal of Sociology* 94:S95-S120.
- Cooksey, Elizabeth C. 1997. "Consequences of Young Mothers' Marital Histories for Children's Cognitive Development." *Journal of Marriage and Family* 59(2):245-61.
- Cooksey, Elizabeth C., and Michelle M. Fondell. 1996. "Spending Time with His Kids: Effects of family structure on fathers' and children's lives." *Journal of Marriage and Family* 58(3):693-707.

- Davis-Kean, Pamela E. 2005. "The Influence of Parent Education and Family Income on Child Achievement: The Indirect Role of Parental Expectations and the Home Environment." *Journal of Family Psychology* 19(2):294-304.
- Deem, Rosemary. 1996. "No Time for a Rest? An Exploration of Women's Work, Engendered Leisure, and Holidays." *Time and Society* 5:5-25.
- Demo, David H., William S. Aquilino, and Mark A. Fine. 2005. "Family Compositions and Family Transitions." Pp. 119-39 in *Sourcebook of Family Theory & Research* edited by Vern L. Bengtson, Alan C. Acock, Katherine R. Allen, Peggy Dilworth-Anderson, and David M. Klein. Thousand Oaks, CA: Sage Publications.
- Di Leonardo, Micaela. 1987. "The Female World of Cards and Holidays: Women, families, and the Work of Kinship." *Signs* 12(3):440-53.
- Downey, Douglas. 1995. "When Bigger is Not Better: Family Size, Parental Resources, and Children's Educational Performance." *American Sociological Review* 60(5):746-61.
- Dufur, Mikaela J., and Kelly P. Troutman. 2005. "Family Structure and Adolescent Labor Market Participation: Examining the Motives for and Effects of At-Risk Students' Work for Pay during High School." in *Fragile Families and the Marriage Agenda*, edited by L. Kowaleski-Jones and N. H. Wolfinger. New York: Aldine de Gruyter.
- Fagan, Jay, and Aquiles Iglesias. 1999. "Father Involvement Program Effects on Fathers, Father figures, and Their Head Start Children: A Quasi-Experimental Study." *Early Childhood Research Quarterly* 14(2):243-69.
- Frankel, Martin, Harold Williams, and Bruce Spencer. 1983. "Technical Sampling Report." Retrieved April 10, 2011 from <http://www.bls.gov/nls/nlsdoc.htm>.

- Furstenberg, Frank , and Mary Elizabeth Hughes. 1995. "Social Capital and Successful Development among At-risk Youth." *Journal of Marriage and the Family* 57(3):580-92.
- Gaunt, Ruth. 2008. "Maternal Gatekeeping: Antecedents and Consequences." *Journal of Family Issues* 29(3):373-95.
- Harris, Kathleen, Frank Furstenberg, and Jeremy Marmer. 1998. "Paternal Involvement with Adolescents in Intact Families: The Influence of Fathers over the Life Course." *Demography* 35(2):201-16.
- Harvey, Elizabeth. 1999. "Short-Term and Long-Term Effects of Early Parental Employment on Children of the National Longitudinal Survey of Youth." *Developmental Psychology* 35(2): 445-459.
- Hays, Sharon. 1996. *The Cultural Contradiction of Motherhood*. London: Yale University Press.
- Hill, Anne M. and June E. O'Neill. 1994. "Family Endowments and the Achievement of Young Children with Special Reference to the Underclass." *Journal of Human Resources* 29(4): 1064–1101.
- Hochschild, Arlie Russell. 1989. *The Second Shift*. New York, NY: Penguin Group.
- Israel, Glenn D., Lionel J. Beaulieu, and Glen Hartless. 2001. "The Influence of Family and Community Social Capital on Educational Achievement" *Rural Sociology* 66(1):43-68.
- Janoski, Thomas, and John Wilson. 1995. "Pathways to Voluntarism: Family Socialization and Status Transmission Models." *Social Forces* 74(271-92).

- Kelly, Diann Cameron. 2006. "Parents' Influence on Youths' Civic Behaviors: The Civic Context of the Caregiving Environment." *Families in Society* 87:447-55.
- Kim, Hyun Sik. 2011. "Consequences of Parental Divorce for Child Development." *American Sociological Review* 76(3):487-511.
- Lareau, Annette. 2003. *Unequal childhoods: Class, Race, and Family Life*. Berkeley, CA: University of California Press.
- Lin, Nan. 2006. "A Network Theory of Social Capital." in *Handbook on Social Capital*, edited by D. Castiglione, J. V. Deth, and G. Wolleb. Oxford: Oxford University Press.
- Mattingly, Marybeth J. , and Suzanne M. Bianchi. 2003. "Gender Differences in the Quantity and Quality of Free Time: The U.S. Experience." *Social Forces* 81(3):999-1030.
- Milkie, Melissa A., and Pia Peltola. 1999. "Playing All the Roles: Gender and the Work-Family Balancing Act." *Journal of Marriage and Family* 61:476-90.
- Milkie, Melissa A. , Sara B. Raley, and Suzanne M. Bianchi. 2009. "Taking on the Second Shift: Time Allocations and Time Pressures of U.S. Parents with Preschoolers." *Social Forces* 88:487-518.
- Mirowsky, John, and Catherine E. Ross. 1989. *Social Causes of Psychological Distress*. Hawthorne, NY: Aldine de Gruyter.
- Mosisa, Abraham, and Steven Hipple. 2006. "Trends in labor force participation in the United States." *Monthly Labor Review* 129(10):35-57.

- Mott, Frank L. 2004. "The Utility of the HOME Scale for Child Development Research in a Large National Longitudinal Survey: The National Longitudinal Survey of Youth, 1979 Cohort." *Parenting: Science and Practice* 4:261-73.
- Muller, Chandra. 1995. "Maternal Employment, Parent Involvement, and Mathematics Achievement among Adolescents." *Journal of Marriage and Family* 57(1):85-100.
- Musick, Marc A., Regula Herzog, and James S. House. 1999. "Volunteering and Mortality among Older Adults: Findings from a National Sample." *The Journals of Gerontology* 54(3):S173-S80.
- NLSY79. 2006. "NLSY79 Child/ Young Adult Data Users Guide. 2006." Retrieved April 10, 2011 from <http://www.bls.gov/nls/nlsdoc.htm>.
- O'Brien, Caughy, Margaret , and Patricia J. O'Campo. 2006. "Neighborhood Poverty, Social Capital, and the Cognitive Development of African American Preschoolers." *American Journal of Community Psychology* 37:141-54.
- Parcel, Toby L. and Mikaela J. Dufur. 2001a. "Capital at Home and School: Effects on Student Achievement." *Social Forces* 79(3):881-912.
- Parcel, Toby L, and Mikaela J. Dufur. 2001b. "Capital at Home and at School: Effects on Child Social Adjustment." *Journal of Marriage and Family* 63:32-47.
- Parcel, Toby L. , and Elizabeth G. Menaghan. 1993. "Family Social Capital and Children's Behavior Outcomes." *Social Psychology Quarterly* 56(2):120-35.
- Parcel, Toby L, and Elizabeth G. Menaghan. 1994a. "Early Parental Work, Family Social Capital, and Early Childhood Outcomes." *American Journal of Sociology* 99(4):972-1009.

- Parcel, Toby L., and Elizabeth G. Menaghan. 1994b. *Parent's Jobs and Children's Lives*.
New York: Aldine de Gruyter.
- Paulson, Sharon E. 1994. "Relations of Parenting Style and Parental Involvement with Ninth-Grade Students' Achievement." *The Journal of Early Adolescence* 14(2):250-67.
- Pleck, Joseph. 2004. "Paternal Involvement: Levels, Sources, and Consequences." Pp. 66-103 in *The Role of the Father in Child Development*, edited by M. E. Lamb.
Hoboken, NJ: Wiley and Sons.
- Putnam, Robert D. 2000. *Bowling Alone: The Collapse and Revival of American Community*.
New York, NY: Simon and Schuster.
- Rotolo, Thomas, and John Wilson. 2007. "The Effects of Children and Employment Status on the Volunteer Work of American Women." *Nonprofit and Voluntary Sector Quarterly* 36:487-503.
- Rubin, Donald B. 1996. "Multiple Imputation After 18+ Years." *Journal of the American Statistical Association* 91(434):473-89.
- Ruhm, Christopher J. 2004. "Parental Employment and Child Cognitive Development." *The Journal of Human Resources* 39(1):155-92.
- Sampson, Robert J. 2001. *Crime and Public Safety: Insights from Community-Level Perspectives on Social Capital*. New York: Russell Sage Foundation.
- Sayer, Liana C. 2005. "Gender, Time and Inequality: Trends in Women's and Men's Paid Work, Unpaid Work, and Free Time." *Social Forces* 84:285-303.

- Sayer, Liana C., Suzanne M. Bianchi, and John P. Robinson. 2004. "Are Parents Investing Less in Children? Trends in Mother's and Fathers' Time with Children." *The American Journal of Sociology* 110:1-43.
- Stephan, Paula. 1991. "Relationships among Market work, Work aspirations and Volunteering: The case of Retired Women." *Nonprofit and Voluntary Sector Quarterly* 20:225-36.
- Stolle, Dietlind. 1998. "Bowling Together, Bowling Alone: The Development of Generalized Trust in Voluntary Associations." *Political Psychology* 19(3):497-525.
- Thoits, Peggy A. and Lyndi N. Hewitt. 2001. "Volunteer Work and Well-Being." *Journal of Health and Social Behavior* 42:115-31.
- Tiehen, Laura. 2000. "Has Working More Caused Married Women to Volunteer Less? Evidence from Time Diary Data, 1965-1993." *Nonprofit and Voluntary Sector Quarterly* 29:505-29.
- Vandell, Deborah L., and Janaki Ramanan. 1991. "Children of the National Longitudinal Survey of Youth: Choices in After-School Care and Child Development." *Developmental Psychology* 27(4):637-43.
- Verba, Sidney, Kay L. Schlozman, and Henry E. Brady. 1995. *Voice and Equality: Civic Voluntarism in American Politics*. Cambridge: Harvard University Press.
- Wilson, John and Marc A. Musick. 1997. "Who Cares? Towards an Integrated theory of Volunteer Work." *Annual Sociological Review* 62:694-713.
- Wilson, John and Marc A. Musick. 2000. "Volunteering." *Annual Sociological Review* 26:215-40.

Wuthnow, Robert. 1998. *Loose Connections: Joining Together in America's Fragmented Communities*. Cambridge: Harvard University Press.

Zelizer, Viviana A. 1985. *Pricing the Priceless Childhood: The Changing Social Value of Children*. New York: Basic Books.

Zellman, Gail L. , and Jill M. Waterman. 1998. "Understanding the Impact of Paternal School Involvement on Children's Educational Outcomes." *Journal of Education Research* 91(6):370-80.

TABLES

Table 1: Description of Variables from 2006 Data

Variable	Description
PIAT Math	This measures math achievement of children ages 10-14
PIAT Reading Recognition	This measures reading recognition of children ages 10-14
Maternal Volunteering (Yes or No)	Includes mother's report of volunteering in last 12 months.
Paternal Involvement	This measures child-reported paternal involvement and comprised of 7 indicators (Chronbach's alpha=.89).
Race of Mother	Measured as 1 dummy variable: white. "Other races" is the reference category.
Maternal Education Level	Measured in years of education
Maternal Work Hours	Measured by the mother's total number of hours worked per week.
Number of Children	Measured by the number of children living in the household
Household Income	Measured by total income of respondent and spouse per year divided by 10,000.
Maternal Marital Status	Measured by mother's reported marital status recoded into 1 dummy variable: married.
Sex of Child	Measured as a dummy variable with female as the reference category.
Child's Health (Yes or No)	This indicates whether or not the child has any physical, emotional, or mental conditions that limit school attendance or physical activity.
HOME	This measures family social capital with a set of questions and observations that measure the overall quality of the home environment

Table 2: Descriptive Statistics of Weighted Sample (Mothers n=850 and Children n=1030)

Variables	X	SE	Range
Children in 2006 (Age 10-14) PIAT Standardized Math Scores	108.98	.52	65-135
Children in 2006 (Age 10-14) PIAT Standardized Reading Recognition Scores	110.20	.57	65-135
“Have you done any unpaid volunteer work in the last 12 months? (Yes=1)	.4379	.02	0-1
Paternal Involvement	1.69	.03	0-3
Race of mother (1=White)	.8206	.01	0-1
Mother’s Years of Education	14.24	.10	1-20
Maternal Work Hours	35.66	1.06	0-170
Household Income	7.09	.0242	0-57.93
Mother’s Marital Status (1=Married)	.7632	.02	0-1
Number of Children Living in the Household	2.39	.05	1-10
Sex of Child (1=Male)	.5045	.01	0-1
Child’s Health	.0422	.01	0-1
Home Environment Score	1002.74	5.86	320-1237

Table 3: Pearson Correlations for all the Independent and Dependent Variables of Interest

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. PIAT Math	--												
2. PIAT Reading Recognition	.54*	--											
3. Unpaid volunteer work (Yes or No)?	.19*	.20*	--										
4. Paternal Involvement	.15*	.08*	.08*	--									
5. White	.28*	.23*	.18*	.17*	--								
6. Maternal Education Level	.26*	.28*	.29*	.17*	.23*	--							
7. Maternal Work Hours	-.07*	-.07*	-.14*	-.03	-.03	.01	--						
8. Number of Children in the HH	-.05	-.11*	.05	.01	-.05*	.06*	.02	--					
9. Household Income	.22*	.21*	.23*	.20*	.23*	.43*	-.13*	.08*	--				
10. Married	.23*	.22*	.21*	.40*	.27*	.27*	-.05	.14*	.43*	--			
11. Male Child	.12*	-.04	-.02	.08*	-.02	-.05	.02	-.05	-.07*	-.02	--		
12. Child Health	-.07*	-.05	-.09*	-.08*	-.01	-.07*	.01	.01	-.10*	-.12*	.02	--	
13. HOME	.28*	.29*	.25*	.37*	.30*	.38*	-.05	-.03	.40*	.50*	-.06*	-.10	--

Note: *p<.05

Table 4: OLS Regression Predicting PIAT Math Scores for 10-14 year olds (n=1030)

VARIABLE	Model I (Independent Variable)	Model II (Paternal Involvement)	Model III (Maternal Characteristics)	Model IV (Child Characteristics)	Model V (Interactions)
R-Square	.0367	.0524	.1497	.1787	.1869
Model F	29.86***	23.75***	25.52***	21.35***	21.77***
Constant	106.57*** (.70)	100.24*** (1.86)	87.61*** (3.36)	77.72*** (4.31)	75.49** (4.87)
Maternal Volunteering (Yes=1)	5.63*** (1.04)	5.39*** (1.04)	2.22* (1.06)	1.87* (1.07)	.53 (8.59)
Paternal Involvement		2.98*** (.78)	.58 (.82)	-.25 (83)	2.55* (1.49)
White			6.93*** (1.10)	6.53*** (1.11)	6.41*** (1.11)
Maternal Education Years			.91*** (.24)	.82*** (.23)	.81*** (.24)
Maternal Work Hours			-.02 (.02)	-.02 (.02)	-.02 (.02)
Number of Children			-.88* (.40)	-.64 (.40)	-.59 (.40)
Household Income			.08 (.07)	.07 (.07)	.08 (.07)
Married			3.61* (1.40)	2.24* (1.47)	2.54* (1.46)
Male child				4.28*** (.96)	4.16*** (.95)
Child's Health				-2.72 (2.74)	-2.95 (2.78)
HOME Environment				.01** (.004)	.008* (.004)
Maternal Volunteering * Paternal Involvement					-4.99* (2.05)
Maternal Volunteering * HOME Environment					.01 (.009)

Note: * p<.05, **p<.01, ***p<.001, One-Tailed Tests. Table entries are unstandardized (metric) regression coefficients (standard errors of estimates in parentheses)

Table 5: OLS Regression Predicting PIAT Reading Recognition Scores for 10-14 year olds (n=1030)

VARIABLE	Model I (Independent Variable)	Model II (Paternal Involvement)	Model III (Maternal Characteristics)	Model IV (Child Characteristics)	Model V (Interactions)
R-Square	.0393	.0435	.1493	.1630	.1701
Model F	31.15***	17.21***	23.32***	19.35***	19.61***
Constant	107.61*** (.75)	104.31*** (1.90)	91.91*** (3.39)	82.45*** (4.53)	79.70*** (4.91)
Maternal Volunteering (Yes=1)	6.05*** (1.12)	5.93*** (1.12)	2.66* (1.15)	2.30* (1.16)	3.12 (8.81)
Paternal Involvement		1.55* (.85)	-1.06 (.82)	-1.58 (.86)	1.19 (1.48)
White			5.11*** (1.19)	4.52*** (1.18)	4.39*** (1.18)
Maternal Education Years			1.12*** (.23)	.97*** (.24)	.96*** (.24)
Maternal Work Hours			-.02 (.02)	-.02 (.02)	-.02 (.02)
Number of Children			-1.75*** (.50)	-1.57*** (.55)	-1.51** (.55)
Household Income			.09 (.08)	.05 (.07)	.06 (.07)
Married			4.51** (1.38)	2.85** (1.49)	3.11* (1.52)
Male child				4.28*** (.96)	-.67 (.96)
Child's Health				-.83 (2.76)	-.99 (2.78)
HOME Environment				.01** (.004)	.01** (.005)
Maternal Volunteering X Paternal Involvement					-4.93* (2.20)
Maternal Volunteering X HOME environment					.01 (.01)

Note: * p<.05, **p<.01, ***p<.001, One-Tailed Tests. Table entries are unstandardized (metric) regression coefficients (standard errors of estimates in parentheses)

FIGURES

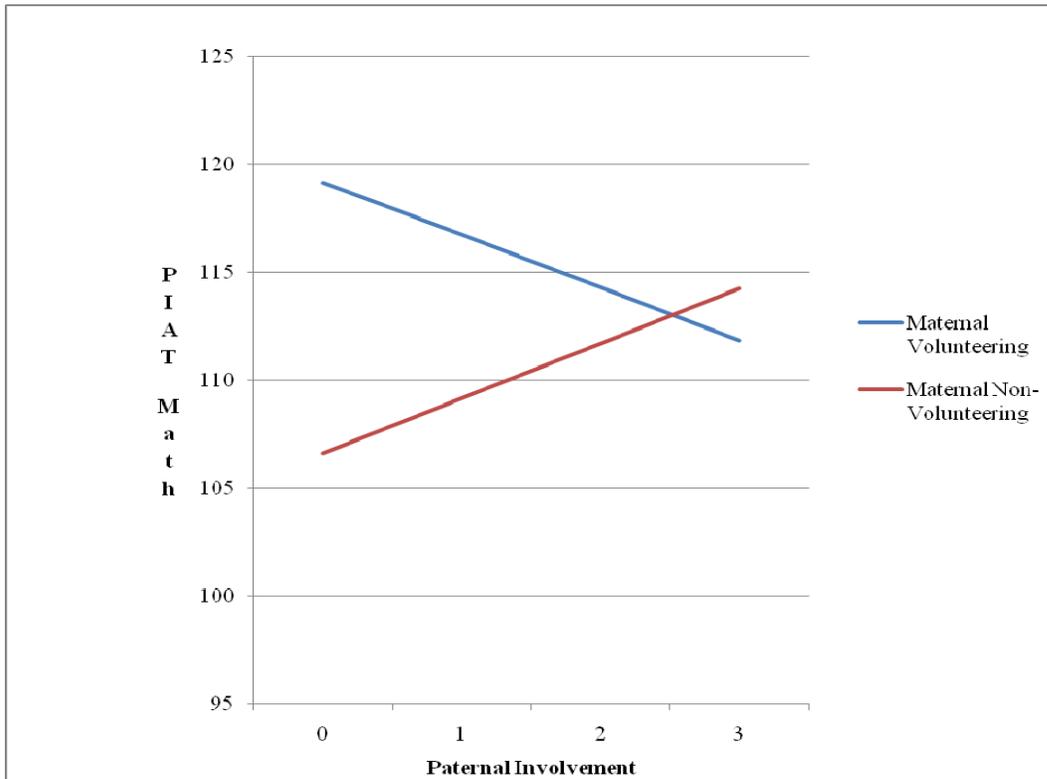


Figure 1. Interaction of Maternal Volunteering and Paternal Involvement when predicting PIAT Math Scores (white male healthy children with married mothers)

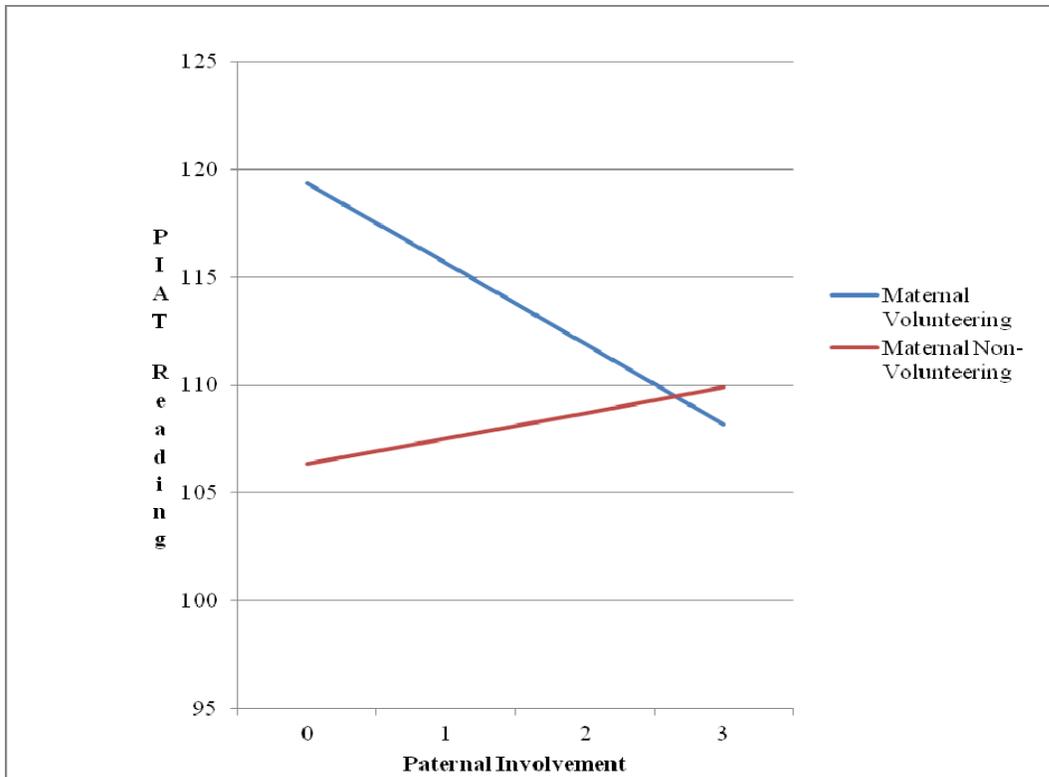


Figure 2. Interaction of Maternal Volunteering and Paternal Involvement when predicting PIAT Reading Recognition Scores (white male healthy children with married mothers)